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Cooperative Extension Work in Agriculture and Home Economics,
Extension Service, University of Maryland, and
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T. B. SYMONS, Director

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Rural Electrification
Series, No. 2

May 1937

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THE COST OF ELECTRICITY FOR YOUR FARM

by

Albert V. Krewatch

UNIVERSITY OF MARYLAND
EXTENSION SERVICE
COLLEGE PARK, MD

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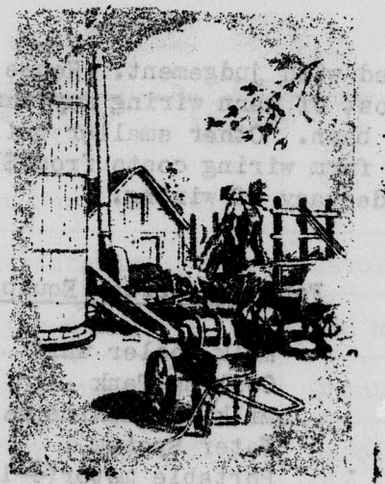
THE COST OF ELECTRICITY FOR YOUR FARM

by
Albert V. Krewatch
Specialist in Agricultural Engineering

Farming by electricity and the use of electricity in the rural home is fast becoming a reality in Maryland. A careful consideration of costs and uses for electricity as compared to other methods of doing the same task is important because it has been demonstrated frequently that the management factor determines the success or failure of farming operations. Electricity, through its remote control, and automatic time, temperature and pressure control in furnishing power, heat and light for various farm operations and processes, can very readily release mental activity to the management of the farming business.

The timeliness factor, and the cost or economic factor are those to which electric service contributes most, and these factors probably have the greatest influence on the labor income. For example, electric refrigeration may influence the purchase or sale of food products. The electric fence may have its influence in crop rotation and weed control. The well equipped shop will assist in keeping farm machinery in good shape and reduce breakdown and delay during the busy season. Poultry lighting, hotbed or soil heating, dairy sterilization, feed grinding and many other uses contribute not only to the management of the farm but to the income as well. The other real and yet intangible value of electric service to the farm family is its contribution to health and the standard of living.



It is the purpose of this circular to assist you work out the cost of electricity for your farm in comparison with present methods of doing things that electricity can do easily, efficiently and with less labor.

Listed in this circular are the most common operations for electricity. On page 4 are figures showing kilowatt-hour consumption for these practical uses. If conditions are normal, variations from the figures will be slight. It is well to remember that the amount of electricity consumed by appliances and other equipment varies with the amount of use.

APPROXIMATE COST OF WIRING AND EQUIPMENT

Obtain local estimate for wiring in accordance with your plan for the home and farm building. For information on planning see both rural electrification series No. 4 "How to Plan Your Wiring" and No. 5 "Recommended Farm Lighting Practices". Sufficient outlets and adequate size wire is most important.

Wiring Estimate

House

Number of Outlets _____ Cost per outlet _____ Total Cost _____

Farm Buildings

Dairy Barn	Number of Outlets _____	Total Cost _____
Horse Stable	Number of Outlets _____	Total Cost _____
Milk House	Number of Outlets _____	Total Cost _____
Silo	Number of Outlets _____	Total Cost _____
Hen Houses	Number of Outlets _____	Total Cost _____
Shop	Number of Outlets _____	Total Cost _____
Garage	Number of Outlets _____	Total Cost _____
Etc.	Number of Outlets _____	Total Cost _____

Power wiring for portable motor, milker, etc. Total Cost _____

Total Wiring Cost for Farm _____

Approximate figures must be used with judgement. House wiring may be estimated at $3.00 per outlet. Cost of barn wiring may vary from $60 to $100 depending on the size of the barn. Other smaller buildings add from $15 to $30 per building. Total farm wiring costs from $125 to $250 depending on the type of farm and adequacy of wiring.

Home Electrical Equipment

Water System _____
Washing Machine _____
Electric Iron _____
Radio _____
Vacuum Cleaner _____
Refrigerator _____
Range _____
Additional Equipment _____

Farm Electrical Equipment

Milk Cooler unit _____
Cooling Tank _____
Milking machine motor _____
Water System _____
Portable motor ($\frac{1}{4}$-1 h.p.) _____
Portable motor (5-7$\frac{1}{2}$ h.p.) _____
Brooder _____
Additional Equipment _____

ESTIMATE OF PRESENT EXPENDITURES

Home Equipment

Item	Fuel, Oil, etc. (Per Month)	Cost Per Month
1. Farm electric plant	Gasoline Gal. ___@___¢ Oil Qt. ___@___¢ Repairs and batteries	
2. Lamps and lanterns	Kerosene Gal. ___@___¢ Gasoline Gal. ___@___¢	
3. Washing machine	Gasoline Gal. ___@___¢	
4. Water pump engine	Gasoline Gal. ___@___¢	
5. Radio (wet or dry batteries)	Divide yearly cost by 12	
6. Oil Stove	Kerosene Gal. ___@___¢ Gasoline Gal. ___@___¢	
7. Commercial gas stove	Determine monthly cost	
8. Ice for home use	Add hauling if not delivered	
9. Other possible tasks for electricity		
10.		
	Present Monthly Expenditure	

Farm Equipment

Item	Fuel, Oil, etc. (Per Month)	Cost Per Month
1. Water pump (if two)	Gasoline Gal. ___@___¢	
2. Milker engine	Gasoline Gal. ___@___¢	
3. Ice for dairy	Add hauling if not delivered	
4. Grain grinding	Ground per month Cwt. ___@___¢	
5. Tractor for grinding	Gasoline Gal. ___@___¢ Oil Qts. ___@___¢	
6. Brooding chicks	Cost per season*	(Do not include
7. Other tasks for electricity		
	Present Monthly Expenditure	

*Estimate other seasonable uses such as incubating, irrigating, silo filling, etc.

Total Cash Expenditure per Month _____

USE OF ELECTRICITY BY FARM EQUIPMENT

The figures showing kilowatt-hour consumption given below are for normal conditions on the average farm.

In the Home (Four persons)	Kilowatt-hours Per Month
Lighting	10-20 (including small household appliances)
Water supply - Shallow well	4½
Washing machine	2-4 (1/3 per person)
Iron	4 (1 per person)
Radio	3½ to 12 (average 8)
Fan	1 for each 8-19 hours operation
Vacuum cleaner	3 per year (1/4 per month)
Refrigerator	30-50
Range	128 (1 per person per day)
Ironing machine	8-10
Sewing machine	1 or less
Water heater	150-600 (average 340)

On the Farm	Consumption in Kilowatt-hours
Lighting the entire farm	25 to 30 per month
Water supply (all farm uses)	20 to 30 per month
Shallow well	1 per 750 gallons
Deep well	1 per 600 gallons
1/4 to 1/3 h.p. motor	1 per 3 to 4 hours of operation
(See Maryland Extension Cir. 105)	
Milk cooling	1 per 10 gallons cooled 30 F.
Milking (portable type)	1½ per cow per month
(pipe line type)	2-3 per cow per month
Dairy water heating	1½ to 3½ per 10 gallons
Sterilizing dairy utensils	
10 - 40 cows	3⅓ to 7½ per day
5 h.p. portable motor	5 per hour of operation
Hay hoisting	1 per 3 tons
Silo filling	1 to 1½ per ton
Wood sawing	1 to 2½ per cord
Feed grinding	1/10 to 3 per 100 lbs.
Brooding	½ per 6 weeks per chick
Incubator (farm)	1 per 3 chicks hatched
Poultry house lights	1 per 100 hens for 6 days
Poultry water heater	1 per 100 hens for 3 days
Fruit grading	½ to 1½ per 100 bushels
Cream separating	½ per 1000 lbs. milk
Churning	1 per 1000 lbs. butter
Sheep shearing	1 per 100 sheep

The electric meter measures the amount of electric energy used and records it in units known as kilowatt-hours. One kilowatt-hour equals 1,000 watts. Roughly, one kilowatt-hour is equivalent to the work done by ten men working one hour, a one horse-power motor working one hour, heating a 500 watt appliance for two hours, or lighting a 100 watt lamp for ten hours.

ESTIMATE COST OF ELECTRICAL ENERGY

Cost of Electricity - Local Rate

The First _____ Kwhrs. @_____¢
The next _____ Kwhrs. @_____¢
The next _____ Kwhrs. @_____¢
The next _____ Kwhrs. @_____¢
Then all over _____ Kwhrs. @_____¢

(In some counties a special rate is available for electric water heaters for household use.)

List uses in the order given on page 4

USES FARM AND HOME	1st. Block ___ Kwhr. @___¢	2nd. Block ___ Kwhr. @___¢	3rd. Block ___ Kwhr. @___¢	4th. Block ___ Kwhr. @___¢	5th. Block over___ Kwhr. @___¢	SUMMARY Cost of Each Use	SUMMARY Cummulative Cost

(The total kilowatt-hours in each column should not be greater than the total for the block)

Estimate Your Water Requirements

		Gallons Per Month
Each Person	(@ 750 gallons per month)	
Each 2 horses	(@ 750 gallons per month)	
Each 2 cows	(@ 750 gallons per month)	
Each 10 hogs	(@ 750 gallons per month)	
Each 20 sheep	(@ 750 gallons per month)	
Total for Farm per Month		

* 750 for shallow well
600 for deep well

$$\frac{\text{Total Gal.}(\quad)}{*(750 \text{ or } 600 \text{ gallons})} = _____ \text{ Kwhrs. per Month}$$

no. 2

LOCAL INFORMATION

Information concerning the use of electric service may be obtained for your county agent or home demonstration agent or the organization serving power in your area.

The county agents office has available information on nearly all phases of rural electrification.

"How to Get Electricity for Your Farm"
"Better Light for Maryland Farm Homes"
"How to Plan Your Electric Wiring"
"Recommended Farm Lighting Practices"
"Uses for Electricity in the Home"
"Uses for Electricity on the Farm"
"Repair and Maintenance of Electric Equipment on the Farm for 4-H Clubs"
"Electric Equipment in the Home - Its Care and Repair"
"Your Small Motor - How To Increase Its Usefulness"

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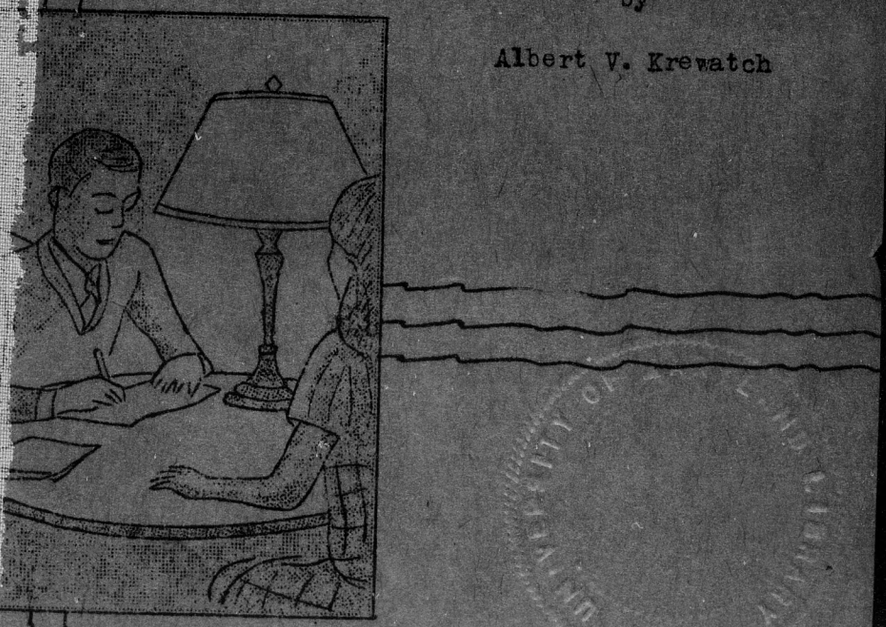
BETTER LIGHT FOR MARYLAND FARM HOMES

by

Albert V. Krewatch



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